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Rarity of *Tænia Solium* in North America.—Stiles. 281

NOTES ON PARASITES.

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32: On the rarity of *Tænia solium* in North America.

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A statement concerning the presence of *Tænia solium* and its larval stage *Cysticercus cellulosæ* in America, which I have noticed in several zoölogical and medical works, and which Railliet has recently repeated in his excellent *Traité de Zoologie médicale et agricole*, 1893, p. 247, leads me to make a correction concerning the question at issue.

Railliet states: "Le Ténia armé est relativement rare en Asie, en Afrique et dans l'Amérique du Sud; il est au contraire assez répandu dans l'Amérique du Nord, où l'élevage des Porcs a pris une énorme extension" . . . "Le parasite (*C. cellulosæ*) est aussi extrêmement répandu en Ireland, en Esclavonie et aux États-Unis."

Railliet and others have evidently based their statements upon the statistics by Osler and Clement from Montreal, upon Verrill's report of 1870, and upon several articles in American medical journals.

McMurrich, in his *Invertebrate Morphology*, (p. 159,) makes the statement that *T. solium* is the most common tapeworm of man, probably on the same authorities.

In regard to the statistics cited I would remark the following:

Osler and Clement state that they found the parasite in Montreal in 76 hogs out of 1037 examined, but that "only the livers were inspected, as is was impossible to examine the meat thoroughly." In spite of the high authority of Osler's and Clement's names, these statistics must be rejected *in toto*, as it is more than probable that the majority of these cases (if not all of them) were *Cysticercus tenuicollis* of *Tænia marginata* instead of *C. cellulosæ*; this statement is borne out by their description of the worm on p. 10 of their report.



Verrill, it will be noticed, does not state directly that he has ever seen a case of *T. solium*, but simply that "our recent war was the means of greatly increasing the numbers of this and other parasites, both internal and external." I cannot admit this statement as having any value in the statistics of *T. solium*, for our soldiers received rations of both pork and beef, and in time of war it is not likely that a surgeon will take the trouble to make specific determinations. Furthermore, it does not appear from the statistics of the Medical Department of the United States Army that tapeworms were especially common during the war, and so far as statistics go no distinction is made in the various species of tapeworms. The following table gives a summary of the parasitic diseases recorded for the Union troops during the war :



## WHITE TROOPS.

|   | May<br>and<br>June, 1861. | July, 1861,<br>to June 30,<br>1862. | July 1, 1862,<br>to June 30,<br>1863. | July 1, 1863,<br>to June 30,<br>1864. | July 1, 1864,<br>to June 30,<br>1865. | July 1, 1865,<br>to June 30,<br>1866. | TOTAL.    |
|---|---------------------------|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------|
| Mean strength in field and garrison . . . . . | 41,556                    | 279,371                             | 614,325                               | 619,703                               | 574,022                               | 99,080                                | 431,237   |
| In general hospitals . . . . .                | —                         | 9,548                               | 45,630                                | 55,710                                | 71,484                                | 2,817                                 | 37,038    |
| Total number of patients treated . . . . .    | 27,717                    | 878,163                             | 1,757,645                             | 1,510,000                             | 1,406,001                             | 245,954                               | 5,825,480 |
| Total number of deaths . . . . .              | 118                       | 19,159                              | 51,870                                | 42,969                                | 47,772                                | 4,735                                 | 166,623   |
| <i>Parasitic Diseases:</i>                    |                           |                                     |                                       |                                       |                                       |                                       |           |
| Itch . . . . .                                | *                         | *                                   | 6,263                                 | 11,826                                | 12,015                                | 1,976                                 | 32,080    |
| Tapeworm . . . . .                            | *                         | *                                   | 142                                   | 142                                   | †221                                  | 43                                    | 548       |
| Worms . . . . .                               | 24                        | 1,057                               | *                                     | *                                     | *                                     | *                                     | 1,081     |
| Other intestinal worms . . . . .              | *                         | *                                   | †913                                  | **444                                 | **332                                 | 41                                    | 1,730     |
| Other diseases of this order . . . . .        | *                         | *                                   | 84                                    | 60                                    | 44                                    | 42                                    | 230       |

\* Not given, or included in general statements.

† 1 death.

\*\* 3 deaths.

## NEGRO TROOPS.

|   | July 1,<br>1863<br>to<br>June 30,<br>1864. | July 1,<br>1864<br>to<br>June 30,<br>1865. | July 1,<br>1865<br>to<br>June 30,<br>1866. | TOTAL.         |           |
|---|--|--|--|----------------|-----------|
| Mean strength in field and garrison . . . . . | 43,952                                     | 83,571                                     | 55,039                                     | 60,854         | —         |
| In general hospital . . . . .                 | 1,222                                      | 5,572                                      | 1,578                                      | 2,791          | —         |
| Total number of patients . . . . .            | —  | —  | —  | Cases. 629,354 | Deaths. — |
| Total number of deaths . . . . .              | —  | —  | —  | —              | 29,004    |
| <i>Parasitic Diseases :</i>                   |  |  |  |                |           |
| Itch . . . . .                                | 387  | 1,456                                      | 1,313                                      | 3,156          | —         |
| Tapeworms . . . . .                           | 8  | 8  | 2  | 18             | —         |
| Other intestinal worms . . . . .              | ‡376                                       | 182  | †66  | 624            | 6         |
| Other diseases of this order . . . . .        | 2  | 9  | 1  | 12             | —         |

Thus in a total of 5,548,854 patients from July 1, 1862, to June 30, 1866, only 566 were diagnosed as having tapeworms, or 1 in 9,803. One of these died, and 8 were discharged from the service on physicians' certificates of disability. These statistics (taken from the Medical and Surgical History of the Rebellion, Part I, Vol. 1, pp. 641, 742,) hardly bear out Ver-  
rill's statement.

As for the statistics of tapeworms given in a number of articles by American physicians, I should ignore the specific determination of *Tænia solium* in the vast majority of cases, on the simple grounds that so little attention is paid to the subject of parasitology in most American medical colleges, that I am not willing to accept the specific determination *Tænia solium* made by the average practitioner, unless verified by a zoölogist. This may seem rather an extreme statement to make, but it is based upon experience, for I have examined a number of worms labeled *Tænia solium* by American and German physicians in this country, and every one has proven to be typical *T. saginata*.

Of all the 300 or more specimens of human tapeworms from patients in various parts of this country, which have passed through my hands during the last three years, 3 specimens have been *Bothriocephalus latus*, and all the rest have been

‡ 5 deaths. † 1 death.



*Tænia saginata*. Personally I have yet to see a strobila of *T. solium* of American origin, although I have seen the *Cysticercus cellulosæ* several times; the only adult *T. solium* contained in the government and private collections under my charge, is one imported in alcohol from Leipzig.

H. C. Hand (1873) in the Report of the Minnesota State Board of Health, collects a number of statistics of tapeworms in Minnesota, but by far the greater part of the determinations are made by practitioners who speak of "*T. solium*" and "*T. lata*" (*Bothriocephalus latus*). Now it is perfectly evident that when a man is not able to distinguish between *Tænia* and *Bothriocephalus*, his determination of *T. solium* is not to be taken. Some of the cases reported in Hand's paper are probably *T. solium*, as cases of pork-measles are also recorded, but the determinations as given are evidently too superficial to be accepted in statistics. One physician records 33 cases of *T. solium* and 2 of "*lata*," but none of *T. saginata*. That these numbers can not be accepted, and that the physician was not acquainted with the characters of *T. solium* is shown by a statement following, to the effect that in one family he found two children and a dog infected with *T. solium*. The strobila of *T. solium*, as a matter of fact, does not occur in the dog. Hand himself points out in his article that many of these determinations are probably incorrect, and that the specimens mentioned as *T. lata* are probably *T. saginata*.

I naturally do not wish to deny that *T. solium* exists in this country, for we have plenty of evidence of its presence in some parts of the country, more particularly in the South, and among the foreigners. Leidy mentions it in Philadelphia; Herff has recently recorded it for Texas; Curtice has seen two cases,\* and a number of other reliable parties have found it in other States. Salmon has seen *C. cellulosæ* in North Carolina and Texas; Leidy in Pennsylvania, Osler in Baltimore, Lessing and others in Minnesota; several cases have been found by Bureau of Animal Industry inspectors in the various abattoirs; Curtice has seen 3 cases (North Carolina and New Mexico). I have one case from Massachusetts, another from Chicago, still another from Montana. On the whole, however, this species of cestode must be looked upon as rare in this country, in comparison with *T. saginata*, and there is no ground, so far as I can find, for believing that *C. cellulosæ*

and the adult form *T. solium* are any more common in North America than they are in Europe; in fact, so far as I can see, from published statistics, from examination of specimens, and from my own personal experience in Germany and America, *T. solium* is more common in Germany than it is in this country.

Our comparative freedom from the worm is probably to be explained by the superiority of our methods in curing pork and by the fact that the unhygienic custom of eating raw pork exists in this country only among the foreigners, chiefly among Germans.

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